

Remarks

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested.

Claims 20, 21 and 23 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Seto (US 2003/0035183) in view of Palmer (US 6,201,820). Claim 22 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Seto in view of Palmer and further in view of Ooi (US 6,362,913).

Claim 20 has been amended so as to further distinguish the present invention, as recited therein, from the references relied upon in the above-mentioned rejections. Further, new claims 24-26 have been added.

It is submitted that the above-mentioned rejections are not applicable to the claims for the following reasons.

Claim 20 is patentable over the combination of Seto and Palmer, since claim 20 recites an optical transmission apparatus including, in part, an external modulator operable to suppress a light frequency modulation component of an optical signal generated when an electrical-optical converter converts an intermediate frequency signal into the optical signal and intensity-modulate the optical signal using a local oscillation signal to produce an intensity-modulated optical signal, wherein an intensity-modulation component of the intensity modulated optical signal has a frequency component of the radio signal. The combination of Seto and Palmer fails to disclose or suggest the external modulator of claim 20.

Seto discloses an optical communication system including a transmitting/receiving station 10B connected to a number of transmitting/receiving devices 32B-1-32B-P by an optical fiber 30. The station 10B includes modulators 12-1-12-P, frequency converters 88-1-88-P, pilot carrier generators 14-1 and 14-2, an adder 16 and an electrical/optical converter 18. The modulators 12-1-12-P output signals modulated with data input thereto to the frequency converters 88-1-88-P, respectively. The frequency converters 88-1-88-P frequency convert the modulated input signals and output the frequency converted signals to the adder 16. The adder 16 adds the frequency converted signals together with pilot carrier signals f_{LO1} and f_{LO2} from the pilot carrier generators 14-1 and 14-2, respectively, and outputs a synthesized signal to the converter 18. The converter 18 outputs a laser beam optically modulated in accordance with the

synthesized signal to an optical divider 34 for transmission to the devices 32B-1-32B-P via the optical fiber 30. (See page 13, paragraphs [0196]– [0206] and Figure 15).

While Seto does disclose the modulators 12-1-12-P, the frequency converters 88-1-88-P, and the electrical/optical converter 18, it is apparent that Seto, as admitted in the rejection, fails to disclose or suggest the external modulator as recited in claim 20. Therefore, Palmer must necessarily disclose or suggest the external modulator in order for the combination of Sato and Palmer to render claim 20 obvious.

Palmer discloses a modulator 150 that includes a combiner 156 for combining a number of subchannels into a signal and outputting the signal to be used to module a transmission laser 158. The modulator 150 is able to modulate each signal of a signal provider 160, 162 onto an optical subchannel 152, 154 using a number of different methods. In a first method, the signal from the signal provider 160 is supplied to an electro-optical differential multiplexer 168 which encodes the signal onto a laser signal from a first laser source 166. The encoded laser signal is then input to a second electro-optical differential multiplexer 170 to be sampled prior to being supplied to the combiner 156. In a second method, the signal from the signal provider 162 is supplied to a current modulator 174 which modulates a junction current of a DFB laser 176 to frequency modulate an optical signal output from the laser 176. The frequency modulated optical signal is then input to an electro-optical differential multiplexer 178 to be sampled prior to being supplied to the combiner 156. (See column 11, line 45 – column 13, line 44; column 14, lines 26-34 and Figure 5).

Based on the above discussion, it is apparent that the modulator 150 is capable of converting signals from signal providers 160, 162 into optical signals to be combined for transmission using a number of electro-optical differential multiplexers 168, 170 and 178. However, Palmer fails to disclose or suggest that the modulator 150, as a whole, or any portion thereof, is operable to suppress a light frequency modulation component of an optical signal generated when an electrical-optical converter converts an intermediate frequency signal into the optical signal and intensity-modulate the optical signal using a local oscillation signal to produce an intensity-modulated optical signal. Therefore, Palmer fails to address the deficiencies of Seto. As a result, it is apparent that the combination of Seto and Palmer fails to render claim 20 obvious.

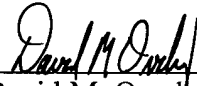
As for Ooi, it is relied upon as disclosing a modulator that produces a single sideband signal and characteristics of a Mach-Zehner type modulator, respectively. However, Ooi fails to disclose or suggest the external modulator as recited in claim 20.

Because of the above-mentioned distinctions, it is believed clear that claims 20-26 are allowable over the references relied upon in the above-mentioned rejections. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 20-26. Therefore, it is submitted that claims 20-26 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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July 7, 2006